Assessing Nursing Clinical Skills Performance Using Objective Structured Clinical Examination (OSCE) for Open Distance Learning Students in Open University Malaysia

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Abstract

Objective: The study assessed clinical competence level among distance learning nursing students', using an objective structured clinical examination (OSCE). Study design: The cross sectional study method was used in this study. There are 5 stations of Objective Structured Clinical Examination. The researchers analyzed the level of competency from overall scores distribution using checklists. Results: The findings revealed that 43(14%) of the nurses have level four competencies, which indicates that they could perform the tasks correctly and complete. However, 36(12%) failed the OSCE, even though these nurses had more than ten years experience and post basic qualification. Among them were clinical instructors and nurse managers that give serious implications for nursing institution and services. The findings show that race, designation, current specialization and OSCE centers have an association with level of competency. Conclusion: An Objective Structured Clinical Exam is a necessary test that needs to be done continuously for tertiary nursing education programs, years of experiences and placement. This study supports the need for objective structured clinical examination in both the design of nursing degree programs and the assessment of nurses' clinical competence level.

Introduction

Objective Structured Clinical Examination (OSCE) is a practical test to assess specific clinical skills. It is well established method of assessing clinical competence. The OSCE was first introduced in medical education in 1975 by Ronald Harden at the University of Dundee. The aim of the OSCE was to assess clinical skills performance. Currently, the OSCE assessments have become a popular tool for assessing clinical competency in nursing. According to Anderson and Stickery (2002) OSCE has been used in medical schools to validate clinical skills/clinical competencies at various points in the curriculum, for both formative and summative evaluations, through the use of 'standardized patients'. A standardized patient was a lay person or actor trained to play the role of a patient with specific complaints (Robbin and Hoke, 2008). The use of actual patient presents several barriers to objective evaluation. For instant, the real patient can presents with a set of symptoms that do not match the student's skill level and may be too ill to interact fully with the student, which can cause severe anxiety that distorts student evaluation (McDowell, Nardini, Negley and White; 1984 cited in Kurz et al., 2009). According to Franklin (2005), the OSCE requires the student to actively demonstrate how she/he would apply acquired knowledge to a simulated 'real world' situation

The OSCE was designed by creating a multistation arrangement in which a student performed an assigned skill or assessment using a standardized patient, while being watched by faculty members before moving on to the next station. Every station assess different clinical competency such as history taking, interpretation of clinical data, nursing diagnoses, giving injection and so on. The students are rotated through a number of stations and in each station they are allotted equal amount of time. The stations can be limited to two, five or more than 20 stations. The validity of the examination increased with the increasing number of the stations. At the ring of a bell, the student enters the station and performs the predefined timed task. At the end of the specified time the student will leave the station and move to the next one. Hence, each student performs the same set of tasks and was

marked according to the same criteria on the examiner's mark sheet. Ahuja(2009) stated that this makes the OSCE structured and objective. An assessor will be placed in most stations to provide direct observation and assessment of each candidate's performance. The assessor will rate each student's performance using the checklist or rating scale. The task at each station tests specific competencies and is marked using the mark sheet. The mark sheet can be a checklist-based or a combination of a checklist and a global score. The students are given an overall score based on the overall performance and according to her or his clinical judgment.

Many authors agreed that OSCE is a valid, reliable and objective method of assessing clinical competence in various setting (Kurz, 2009). Robbin and Hoke (2008) proposed three components for a valid clinical competence evaluation system: validity, reliability and practicality. OSCEs provide a valid means to evaluate a student's performance in a holistic manner. Specifically, exercises are designed to allow student evaluation through the entire patient encounter, including history, examination, identification of initial problems, selection of tests needed, interpretation of the results of the encounter, and appropriate treatment recommendations. Reliability of the OSCE is based on the interaction among the standardized patient, the student, and the evaluator. Increasing the number of evaluators increases the OSCE reliability. Practicality is a mediating factor when working with OSCEs.

In OUM, clinical practicum includes all supervised learning by preceptor; self directed learning; and facilitation of learning by tutor and subject matter experts. The clinical practice is divided into two categories; general and specific. In general practicum, student will continue to work in their own organization while in specific practicum, it involves three out of six specialization areas offered by OUM. The OSCE has been used as a clinical evaluation and 50% of the marks were allotted for the OSCE.

Research Objective

The primary objective of this study was to determine the clinical competence level among distance learning nursing students through OSCE.

Methodology

This is a cross sectional survey designed to evaluate the clinical competence of nursing students through OSCE. The clinical competency level was assessed using a checklist, which graded the level of competency into four levels. The data was collected over a period of three days, starting from 1st to 3rd May 2009. The universal sampling method was used, whereby all students that participated in OSCE from three centers were invited to participate in the study, and participation was voluntary. The total number of the students involved in the OSCE was 569. However, only 311(54.7%) participated in this study, the others were not willing to participate. A set of questionnaire was distributed and the students were required to answer it before the OSCE started. The questionnaire was divided into two sections: section A consisted of demographic data and section B was a set of checklist on the assigned skills. The respondents' clinical competencies levels were based on their performance in each station. There were five stations in the OSCE. The level of competency was adopted from (Kurz et al., 2009).

Data Analysis and Results

This section presents the results of the study. The data was analyzed using Statistical Package for Social Sciences (SPSS) version 15.0. Statistical tables and percentage were used for data presentation; while Chi-square and Spearman's correlation were applied to test significance of association between demographic factors and competency levels. Level of significance was set at $p = 0.05$. The tables below show the demographic distribution of the respondents.

Demographic Data

Age Range	Frequency	Percentage
21 - 30	50	16.1
31 - 40	127	40.8
41 - 50	103	33.1
51 - 60	31	10.0
Total	311	100.0

Table 1: Distribution of age

Table 1 shows that majority of the respondents 40.8% (127), were aged between 31 to 40 years old, 33.1% (103) between 41-50 years old and 10% (31) were between 51 to 60 years old.

Race	Frequency	Percentage
Malay	186	59.8
Chinese	23	7.4
Indian	21	6.8
Others	81	26.0
Total	311	100.0

Table 2: Race distributions

Table 2 shows that majority of respondents were Malays 185(59.8%), followed by Chinese 32 (7.4%), Indians 21 (6.8%) and others 81 (26%).

Years of Experience	Frequency	Percentage
1-10	89	28.6
11 - 20	133	42.8
21 - 30	76	24.4
31 - 40	13	4.2
Total	311	100.0

Table 3: Distribution of years or experience

The above table shows the distribution of years of experience among the participants. Majority of them, 133 (42.8%) had 11-20 years experience in nursing, while 13(4.2%) had 31-40 years experience.

Designation	Frequency	Percentage
Staff nurse	179	57.6
Nurse manager/executive	55	17.7
Tutor/lecturer	43	13.8
Clinical instructor	34	10.9
Total	311	100.0

Table 4: Distribution of designation

Table 4 shows that most of the respondents were staff nurses, 179 (57.6%), 55(17.7%) were nurse managers or nurse executives, 13.8% (43) were tutors or lecturers from nursing colleges and 34 (10.9%) were the clinical nurse instructors.

Post Basic	Frequency	Percentage
Trauma & Emergency	11	3.5
Critical care	25	8.0
Renal	8	2.6
Pediatric	16	5.1
Mental Health	4	1.3
Oncology	11	3.5
Others	164	52.7
Non	72	23.2
Total	311	100.0

Table 5: Distribution of Post Basic courses

The above table shows that majority of respondents have post basic in different areas. Only 72 (23.2%) of the respondents did not have any post basic training.

Specialization	Frequency	Percentage
Trauma & Emergency	56	18.0
Critical care	89	28.6
Renal	44	14.1
Pediatric	47	15.1
Mental health	59	19.0
oncology	16	5.1
Total	311	100.0

Table 6: Distribution of current specialization

Table 6 shows that majority of the respondents had taken Critical care as their clinical specialization, 89(28.6%). Only 16 (5.1%) of the respondents took Oncology as their clinical specialization.

OSCE Centre	Frequency	Percentage
UITM	143	46.0
USM	69	22.2
ASIANA	99	31.8
Total	311	100.0

Table 7: Distribution of OSCE center

The above table shows the distribution of respondents in three major OSCE centers. The data shows that 143 (46%) of the respondents were from UITM, 99 (31.8%) from Asiana, Sabah and 69 (22.2%) were from USM, Kelantan.

Level of competency	Frequency	Percentage
49 and below (level 1)	36	11.6
50 – 59(level 2)	59	19.0
60 – 74(level 3)	173	55.6
75 – 100 (level 4)	43	13.8
Total	311	100.0

Table 8: Distribution of level of competencies

Table 8 shows the distribution of level of competencies among the respondents. 43 (13.8%) of the respondents achieved level four competency, which indicated that they had excellent clinical performance. However, there were 36 (11.6%) respondents who failed the standard OSCE clinical competency test.

OSCE CENTRE	Level of Competency				
	1	2	3	4	Total
UITM	15 (4.8%)	30 (9.6%)	81 (26%)	17 (5.5%)	143 (46%)
USM	19 (6.1%)	15 (4.8%)	30 (9.6%)	5 (1.6%)	69 (22.2%)
ASIANA	2 (0.6%)	14 (4.5%)	62 (19.9%)	21 (6.8%)	99 (31.8%)
Total	36 (11.6%)	59 (19%)	173 (55.6%)	43 (13.8%)	311 (100%)

Table 9: Cross tabulation between OCSE centers and level of competency

The above table shows that 21 (6.8%) respondents from Asiana had higher level of competence compared to other centers. The result also revealed that 19 (27.5%) out of 69 respondents from USM center failed their OSCE.

	Value	df	Asymp. Sig. (2-sided)
Chi-Square	34.123(a)	6	.000
N of Valid Cases	311		

Table 10: Chi-square tests for Difference in level of competencies between OSCE centers
0 cells (.0%) have expected count less than 5. The minimum expected count is 7.99.

The above table shows the Chi-Square test for significance of difference in level competencies between OSCE centers and. The result revealed a significant difference at $p < 0.001$. Therefore, this indicates that there was an association between OSCE centers and level of competencies.

			OSCE CENTRE	Level of Competency
Spearman's rho	OSCE CENTRE	Correlation Coefficient	1.000	.135(*)
		Sig. (2-tailed)	.	.017
		N	311	311
	Level of competency	Correlation Coefficient	.135(*)	1.000
		Sig. (2-tailed)	.017	.
		N	311	311

Table 11: Spearman's rho Correlation between OSCE centre and level of competencies

Table 11 shows there were significant association between OSCE centre and level of competencies at $p=0.017$. This finding supported the result of the Chi Square test above. Although the association is significant, it appears quite weak, considering the correlation coefficient value of $r=0.135$.

CURRENT SPECIALIZATION	Level of Competency 1	2	3	4	Total
Trauma & Emergency	4 (1.3%)	11 (3.5%)	35 (11.3%)	6 (1.9%)	56 (18%)
Critical care	3 (1%)	9 (2.9%)	55 (17.7%)	22 (7.1%)	89 (28.6%)
Renal	7 (2.3%)	11 (3.5%)	21 (6.8%)	5 (1.6%)	44 (14.1%)
Pediatric	22 (7.1%)	5 (1.6%)	19 (6.1%)	1 (0.3%)	47 (15.1%)
Mental health	0 (0%)	17 (5.5%)	34 (10.9%)	8 (2.6%)	59 (19%)
Oncology	0 (0%)	6 (1.9%)	9 (2.9%)	1 (0.3%)	16 (5.1%)
Total	36 (11.6%)	59 (19%)	173 (55.6%)	43 (13.8%)	311(100%)

Table 12: Cross tabulation between Current Specialization and level of competency

Table 12 shows result of cross tabulation between current specialization and level of competencies. In Trauma and Emergency, only 1.9% (6) of the respondents scored 75 to 100 marks, while only 1.3% (4) had 49 and below. Data for Critical care specialization showed that majority of the respondents, 17.7% (55) scored 60 to 74 marks and only 1% (3) scored 49 and below. In Renal 1.6% (5) scored 75 to 100 marks, while 6.8% (21) had 60 to 74 marks. Pediatric specialization showed that majority of the respondents had marks 49 and below, and only 0.3% (1) had scores above 49. There was no failure in mental health and oncology specializations.

	Value	df	Asymp. Sig. (2-sided)
Chi-Square	95.208(a)	15	.000
N of Valid Cases	311		

Table 13: Chi-square test of Association between Current Specialization and Level of Competency
3 cells (12.5%) have expected count less than 5.

Table 13, shows that there was an association between respondents' current specialization and level of competency, at p=0.001.

			CURRENT SPECIALIZATION	Level of Competency
Spearman's rho	CURRENT SPECIALIZATION	Correlation Coefficient	1.000	-.156(**)
		Sig. (2-tailed)	.	.006
		N	311	311
	Level of competency	Correlation Coefficient	-.156(**)	1.000
		Sig. (2-tailed)	.006	.
		N	311	311

**Correlation is significant at the 0.01 level (2-tailed).

Table 14: Spearman correlation between current Specialisation and Level competency

Table 14 shows there was negative correlation r = -0.156 between current specialization and level of competency, at p=0.006.

	Level of Competency				
Designation	1	2	3	4	Total
Staff Nurse	21 (6.8%)	37 (11.9%)	101 (32.5)	20 (6.4%)	179 (57.6%)
Nurse Manager/Executive	7 (2.3%)	10 (3.2%)	31 (10%)	7 (2.3%)	55 (17.7%)
Tutor/Lecturer	2 (0.6%)	9 (2.9%)	22 (7.1%)	10 (3.2%)	43 (13.8%)
Clinical Instructor	6 (1.9%)	3 (1%)	19 (6.1%)	6 (1.9%)	34 (10.9%)
Total	36 (11.6%)	59 (19%)	173 (55.6%)	43 (13.8%)	311 (100%)

Table 15: Cross tabulation between Designation and competency level

Table 15 shows cross tabulation of designation and respondents level of competency. Majority of the Staff Nurses, 32.5% had 60 to 74 marks and 6.8% had 49 and below. Amongst the Nurse Managers or Executives, only 2.3% had highest score of 75 – 100%, and the same percentage had score 49% and below. For Nurse Tutors or Lecturers, 3.2% (10) had score 75 to 100 marks and small percentage, 0.6% (2) had 49 and below.

		Level of Competency				
		1	2	3	4	Total
RACE	Malay	33 (10.6%)	39(12.5%)	100 (32.2%)	14 (4.5%)	186 (59.8%)
	Chinese	0	3 (1%)	15 (4.8%)	5 (1.6%)	23 (7.4%)
	Indian	1 (0.3%)	5 (1.6%)	8 (2.6%)	7 (2.3%)	21 (6.8%)
	Others	2 (0.6%)	12 (3.9%)	50 (16.1%)	17 (5.5%)	81 (26%)
Total		36 (11.6%)	59 (19%)	173 (55.6%)	43 (13.8%)	311 (100%)

Table 16: Cross Tabulation of Race and Competency Level

Table 16 shows that level of competence is higher amongst people from Other Races (5.5%) compared to Malays, Indians, and Chinese. The chi-square test below also shows that there was an association between races and level of competency. However, 6 cells had expected count less than 5.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	34.594(a)	9	.000
N of Valid Cases	311		

Table: 17 Chi-Square Tests between race and level of competency
6 cells (37.5%) have expected count less than 5. The minimum expected count is 2.43.

			RACE	Level of Competency
Spearman's rho	RACE	Correlation Coefficient	1.000	.276(**)
		Sig. (2-tailed)	.	.000
		N	311	311
	Level of Competency	Correlation Coefficient	.276(**)	1.000
		Sig. (2-tailed)	.000	.
		N	311	311

Table 18: Correlation between races and level of competency
**Correlation is significant at the 0.01 level (2-tailed).

Table 18 shows that there was correlation between race and level of competency, $p<0.05$ and $r= 0.276$, which indicates that there was weak relationship between race and level of competencies.

Other variables such as years of experience, present work place, post basic qualification and age have no association with respondents' level of competency.

Discussion of Findings and the Implications

Assessing nursing students' OSCE competency level is usually done for students undergoing traditional learning mode. In this study the researchers investigated OSCE performance for nurses who were enrolled in a distance learning programme. The findings of this study show that even though most of nurses had more than 10 years experience, 36 (11.6%) of them failed the OSCE and 59 (19%) attained only level two of the skills competency, which indicate that they performed less than 60% correct in their tasks. This suggests that having many years of experience does not mean that the nurses were competent. This also shows the need for nursing administrators to always test nurses' clinical skills performance, regardless of their years of experience, in order to ensure that the nurses can deliver safe and high quality care. Nurses' incompetencies can cause medical error and damage to the patient and increase the rate of medical litigations.

As would be observed in many two year nursing degree programmes, the OSCE has been excluded because many nursing educators believed that all these nurses have sufficient practical experiences. However, this study has shown that by doing routine work, without any clinical examination, we cannot conclude that the nurses are competent. In this study only 43(13.8%) of the nurses had level four competency, which means that they could performed the task completely and correctly.

The findings of this study also show that current specialization has relationship with respondents' OSCE competency level, which indicates that they would only perform better in the task or skills they are familiar. It was also found that Staff Nurses can perform OSCE better than Nurse Managers or Executives. Surprisingly, 6 out of 34 clinical instructors failed their OSCE test. Clinical Instructors are important guides to the students, and since some of them failed the OSCE, this highlights the need for continuous monitoring of their performance. Currently, not all clinical instructors have degree qualification. Most of them were selected based on their experience and post basic qualification. This result emphasized the need for nursing institutions to select qualified clinical instructors. The nursing institutions need to have specific criteria or guidelines for employing clinical instructors, which is not based only on their experiences and post basic qualification.

It was also found that nurses from certain centres performed better than others. For example, 19 out of 69 nurses from USM centre failed their OSCE. However, due to some limitations of this study, the researchers could not uncover the underlying causal factors. Further studies need to be done to identify the factors that caused the students' failures in certain centres and how to improve nurses OSCE performance.

Conclusion

In conclusion, we assert that level of competency in OSCE should be tested not only for nurses using the traditional methods of learning, but also for distance learning students. Even though distance learning students have more experience and post basic qualifications, there is a need for them to be tested, considering the findings of this study which shows that only 14% of the nurses have high level of competency.

Although this study could not investigate the factors that contributed to the differential rates of failure in different centres, our conclusion is that an understanding of the procedures and methods of

implementation of OSCE in different centres is important for a fuller explanation of students' performance in OSCE.

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